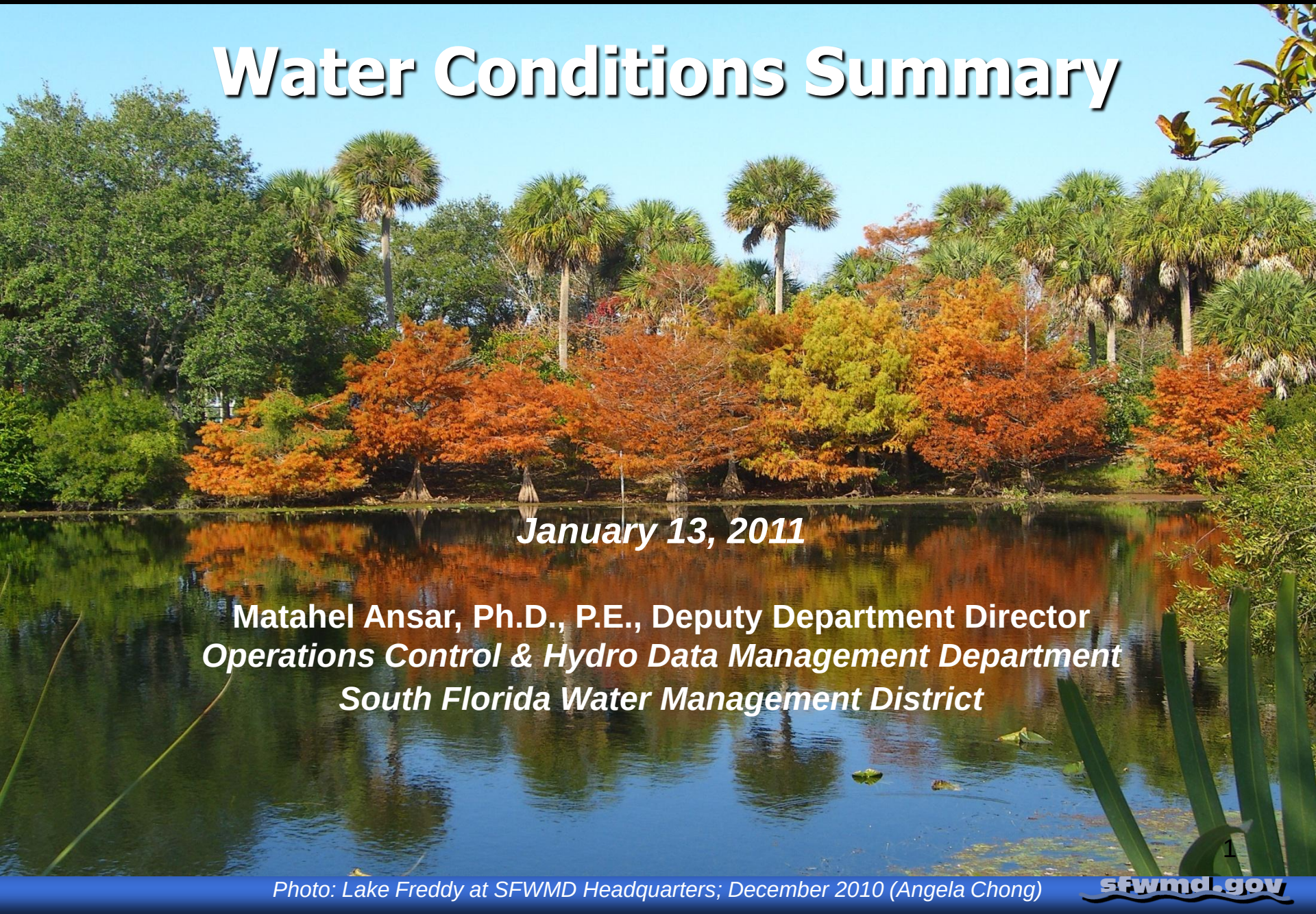
Water Conditions Summary



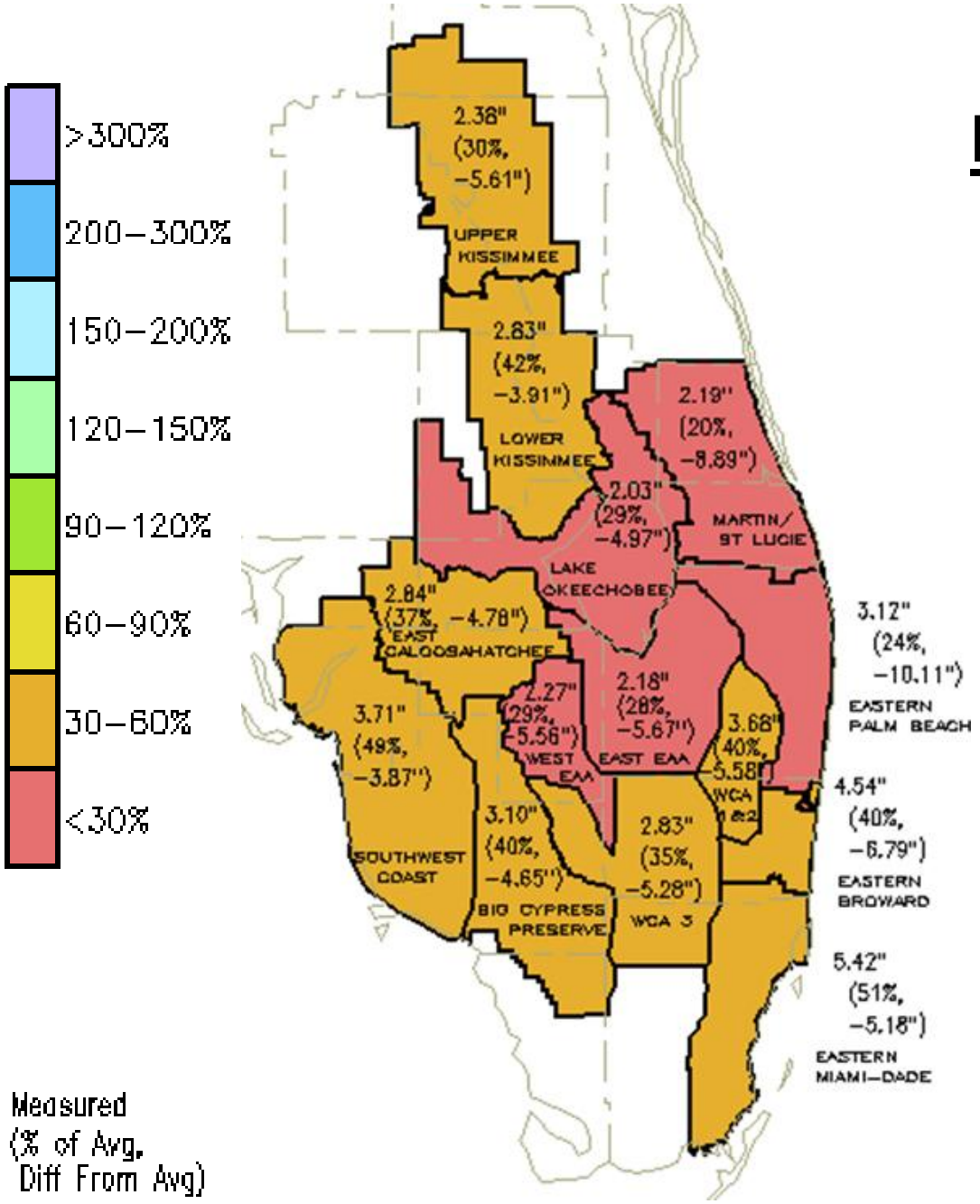
January 13, 2011

Matahel Ansar, Ph.D., P.E., Deputy Department Director
Operations Control & Hydro Data Management Department
South Florida Water Management District

Photo: Lake Freddy at SFWMD Headquarters; December 2010 (Angela Chong)

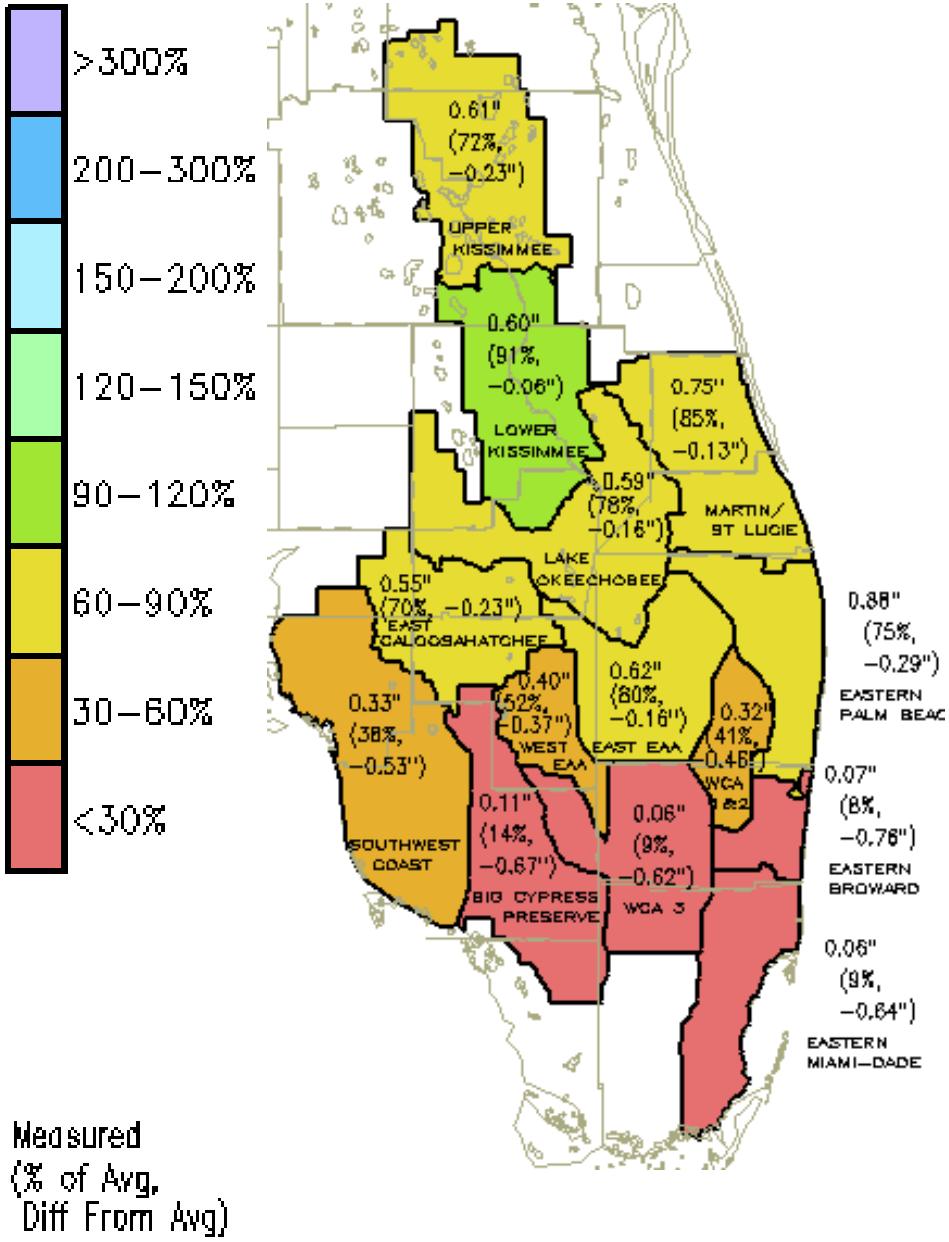
SFWMD 2010
Dry Season Rainfall
Oct 02 – Jan 1

DISTRICT-WIDE: 2.97” (35% of Avg, or -5.46”)



- Lowest rainfall for Oct (12% of Avg., -2.98”) and Oct –Nov-Dec (3 months) since recordkeeping began in 1932
- Martin/St Lucie, Eastern Palm Beach and interior basins (Lake O., EAA) received less then 30% of average rainfall
- Upper and lower Kissimmee Basins received less than 50% of average rainfall

SFWMD 2011
January Rainfall
Jan 2 – Jan 12



DISTRICT-WIDE:
0.45” (57%, -0.34”)

- Through Jan 12, District wide January rainfall is about 57% normal

- Last week rainfall brought limited but much needed relief to Lower Kissimmee and Upper East Coast

- Eastern Broward, Miami Dade, Big Cypress Preserve and WCA3 are well below normal

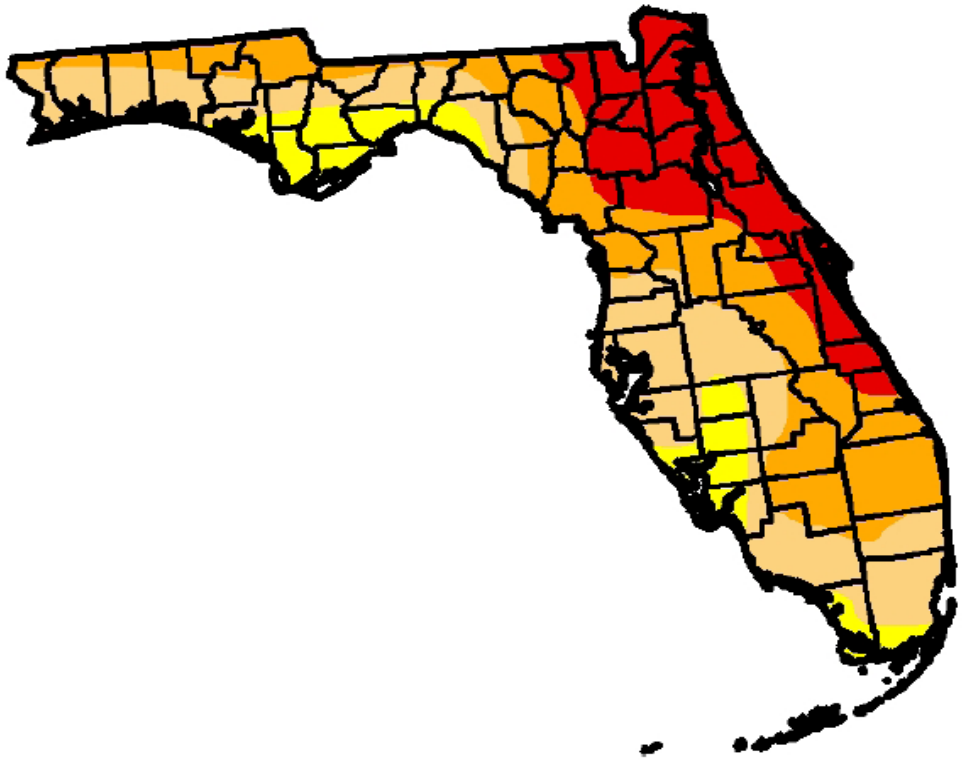
U.S. Drought Monitor

Florida

January 4, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.18	99.82	87.19	54.19	21.61	0.00
Last Week (12/28/2010 map)	0.18	99.82	86.04	50.84	20.21	0.00
3 Months Ago (10/05/2010 map)	55.09	44.92	25.36	5.98	0.00	0.00
Start of Calendar Year (12/28/2010 map)	---	---	---	---	---	---
Start of Water Year (09/28/2010 map)	54.97	45.03	18.02	4.22	0.00	0.00
One Year Ago (12/29/2009 map)	96.88	3.12	0.00	0.00	0.00	0.00



Intensity:

- *D0 Abnormally Dry*
- *D1 Drought - Moderate*
- *D2 Drought - Severe*
- *D3 Drought - Extreme*
- *D4 Drought - Exceptional*

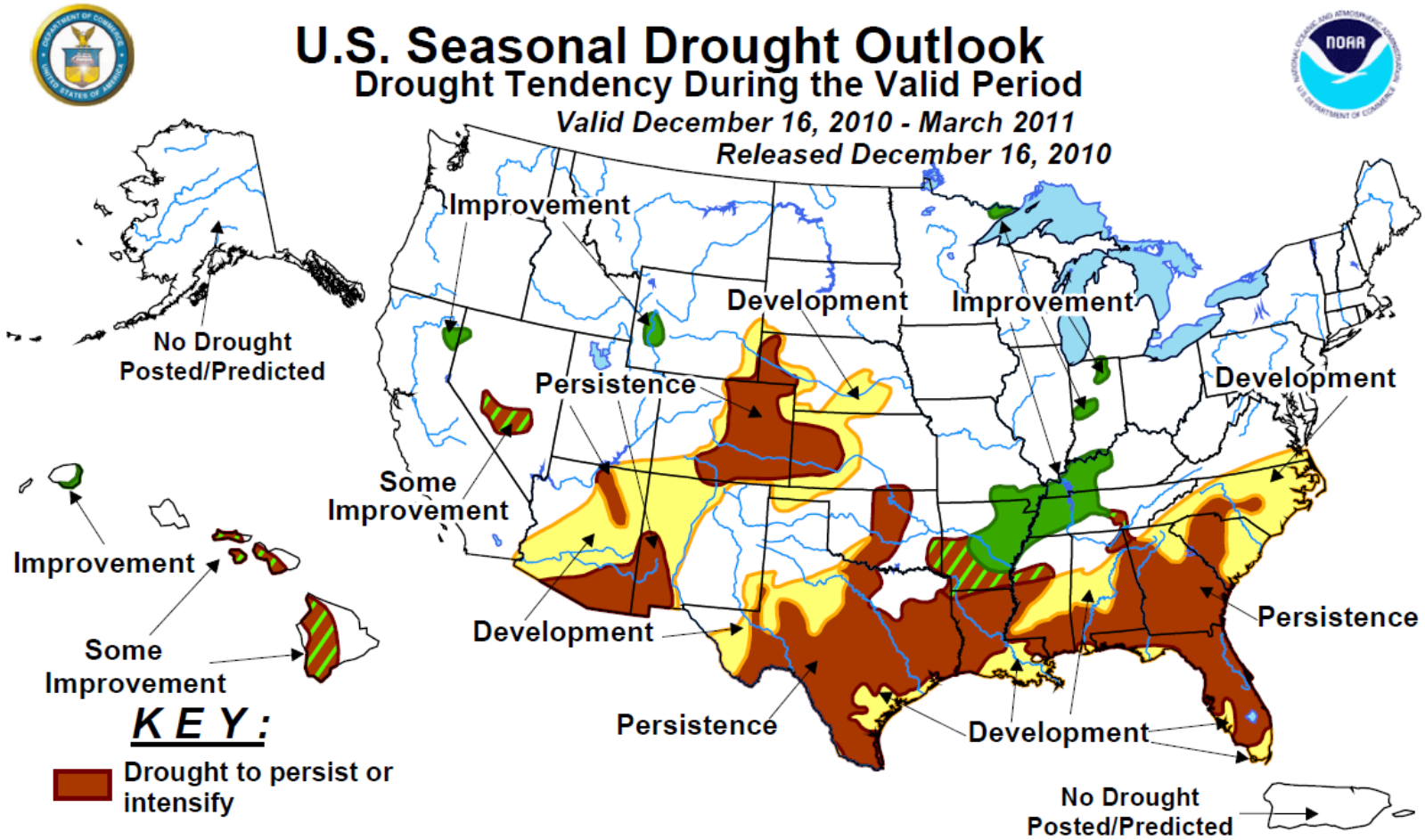
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

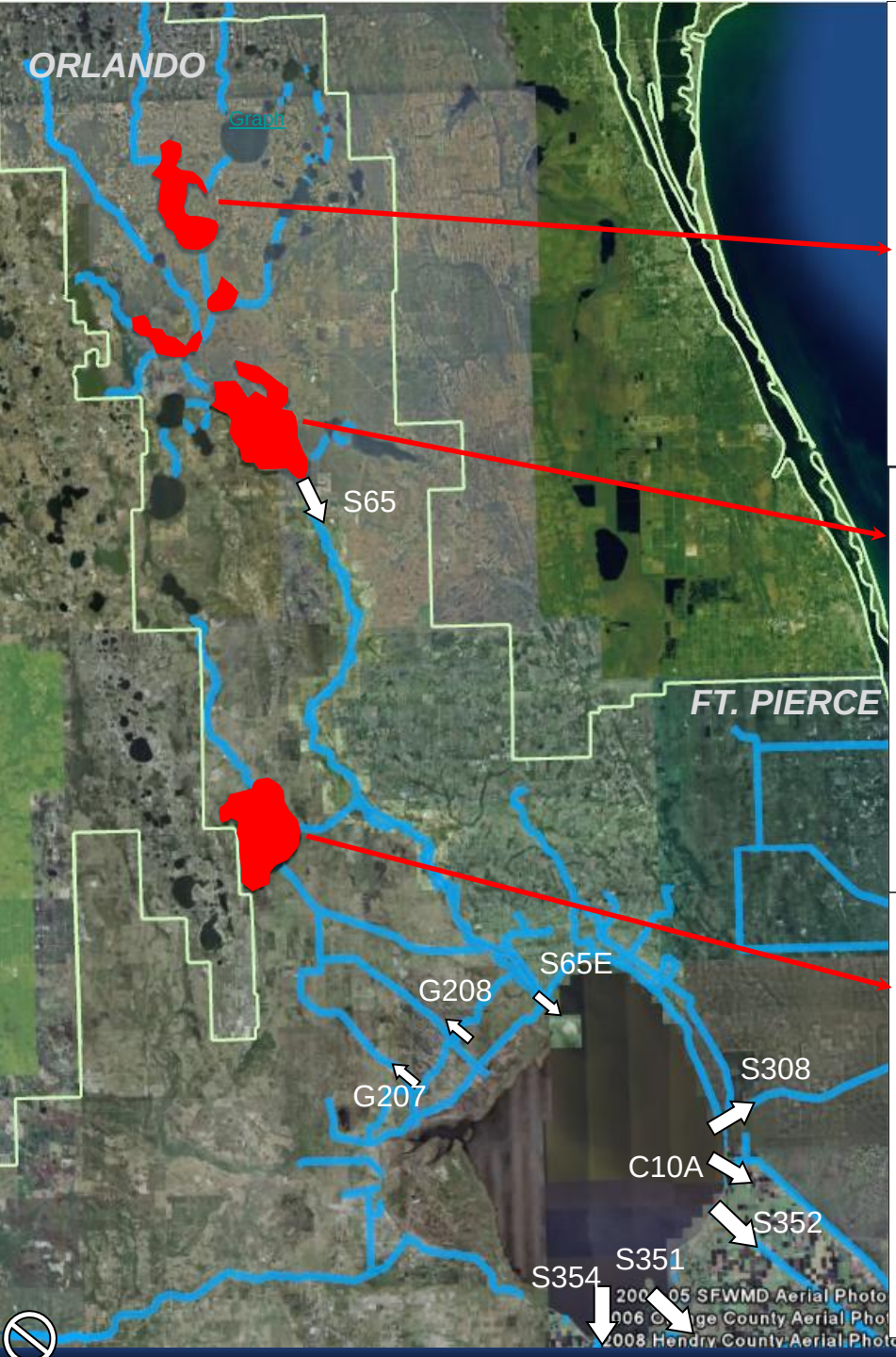
USDA | National Drought Mitigation Center | NOAA

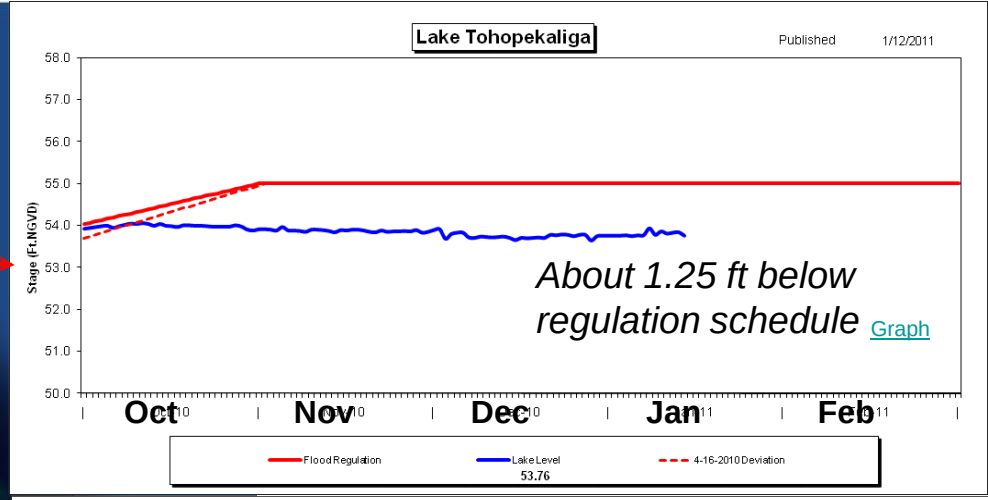
Released Thursday, January 6, 2011
National Drought Mitigation Center

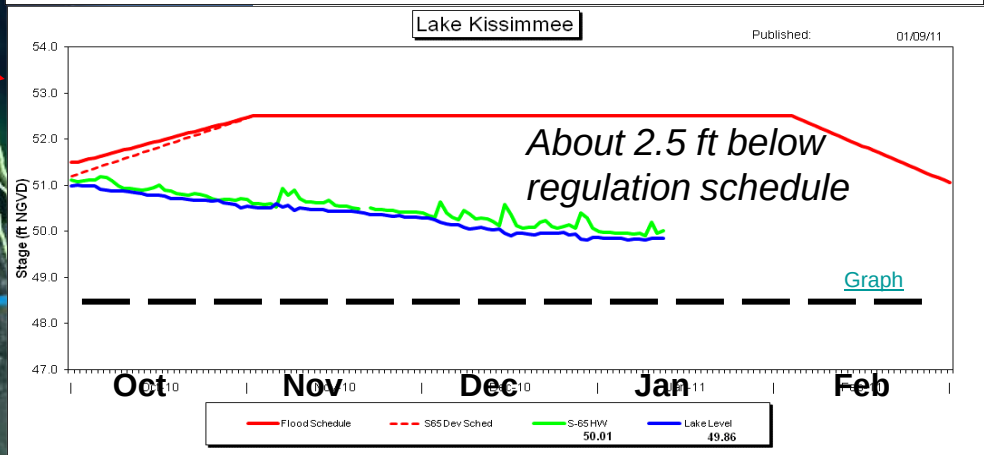
U. S. Drought Outlook (Dec-March)

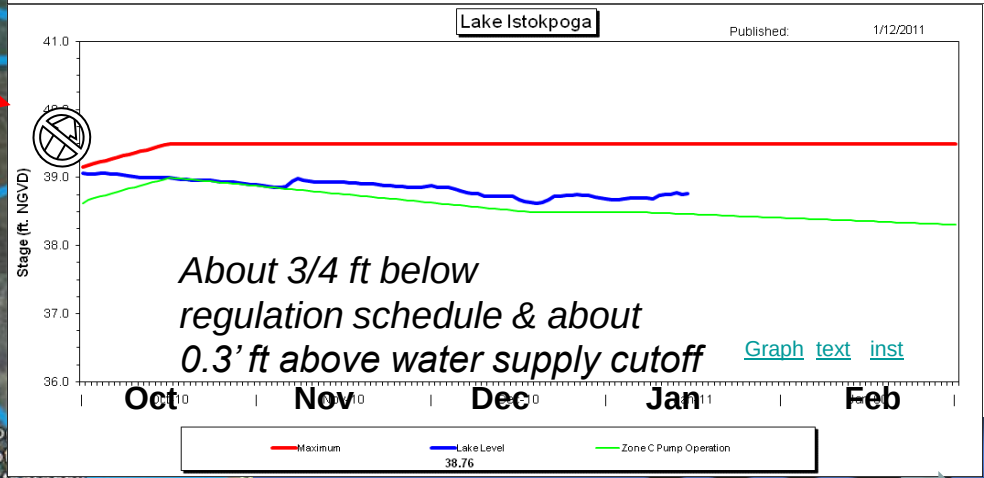


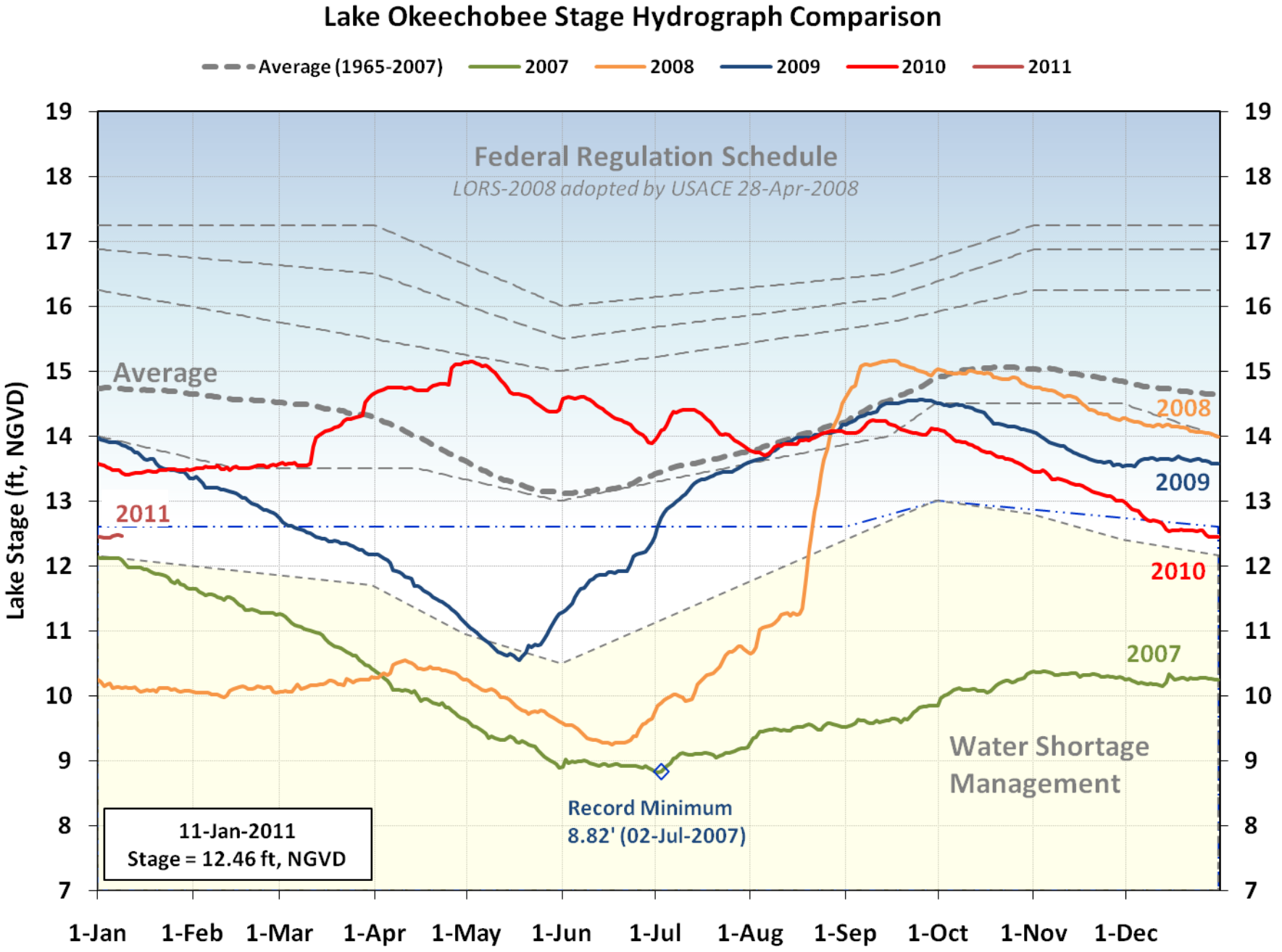
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

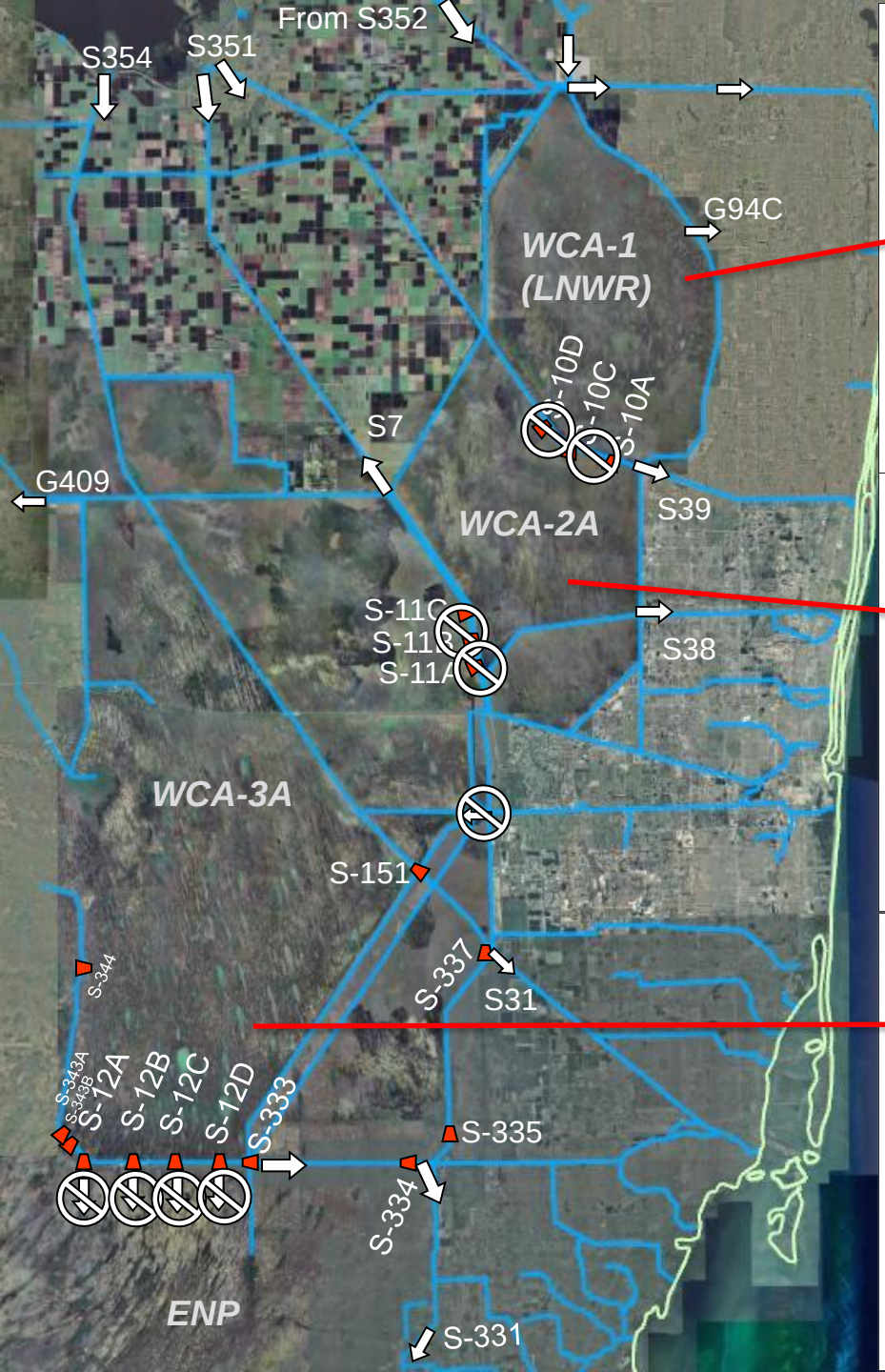

ORLANDO
Graph
S65
FT. PIERCE
S65E
G208
G207
S308
C10A
S352
S351
S354
2005 SFWMD Aerial Photo
2006 County Aerial Pho
2008 Hendry County Aerial Photography

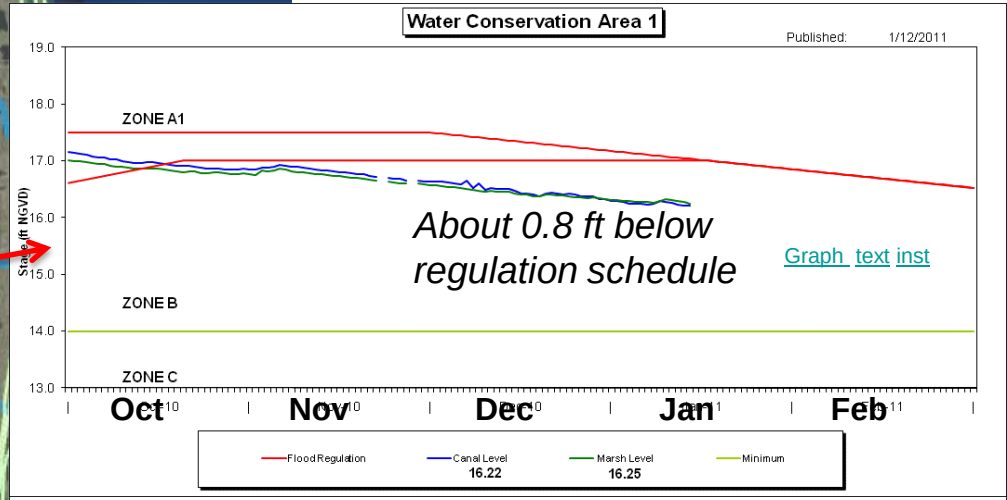

Lake Tohopekaliga
Published 1/12/2011
Stage (Ft.NGVD)
58.0
57.0
56.0
55.0
54.0
53.0
52.0
51.0
50.0
Oct
Nov
Dec
Jan
Feb
About 1.25 ft below regulation schedule
Graph
Flood Regulation
Lake Level
53.76
4-16-2010 Deviation

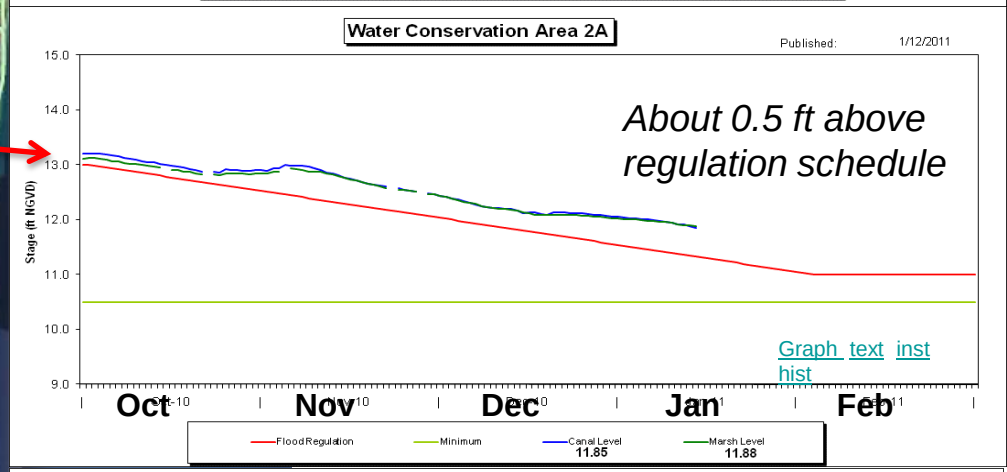

Lake Kissimmee
Published: 01/09/11
Stage (ft NGVD)
54.0
53.0
52.0
51.0
50.0
49.0
48.0
47.0
Oct
Nov
Dec
Jan
Feb
About 2.5 ft below regulation schedule
Graph
Flood Schedule
S65 Dev Sched
S-65 HW
50.01
Lake Level
49.86

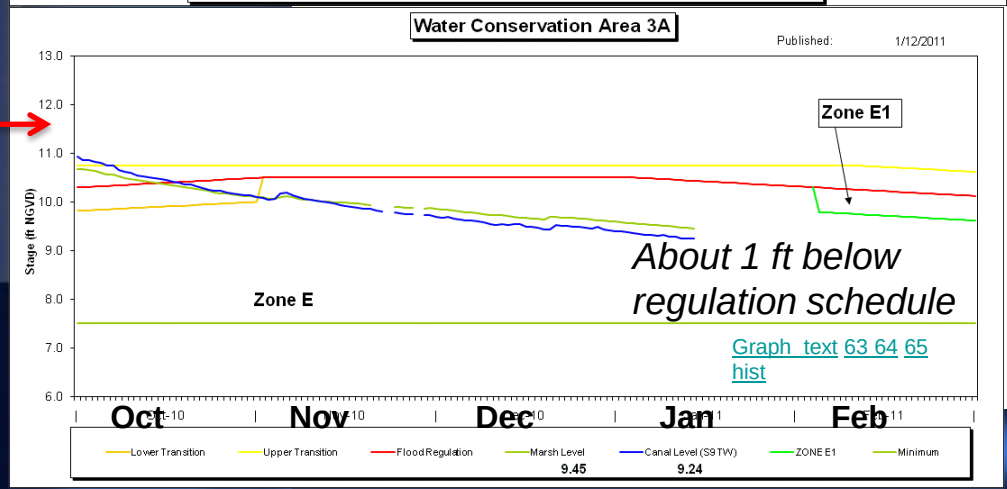

Lake Istokpoga
Published: 1/12/2011
Stage (ft. NGVD)
41.0
39.0
38.0
37.0
36.0
Oct
Nov
Dec
Jan
Feb
About 3/4 ft below regulation schedule & about 0.3' ft above water supply cutoff
Graph
text
inst
Maximum
Lake Level
38.76
Zone C Pump Operation


Lake Okeechobee Stage Hydrograph Comparison
Average (1965-2007)
2007
2008
2009
2010
2011
Federal Regulation Schedule
LORS-2008 adopted by USACE 28-Apr-2008
Average
2008
2009
2011
2010
2007
Water Shortage Management
Record Minimum
8.82' (02-Jul-2007)
11-Jan-2011
Stage = 12.46 ft, NGVD
Lake Stage (ft, NGVD)
19
18
17
16
15
14
13
12
11
10
9
8
7
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec


From S352
S354
S351
G94C
WCA-1
(LNWR)
S-10D
S-10C
S-10A
S7
G409
S39
WCA-2A
S-11C
S-11B
S-11A
S38
WCA-3A
S-151
S-344
S-337
S31
S-343A
S-343B
S-12A
S-12B
S-12C
S-12D
S-333
S-335
S-334
ENP
S-331

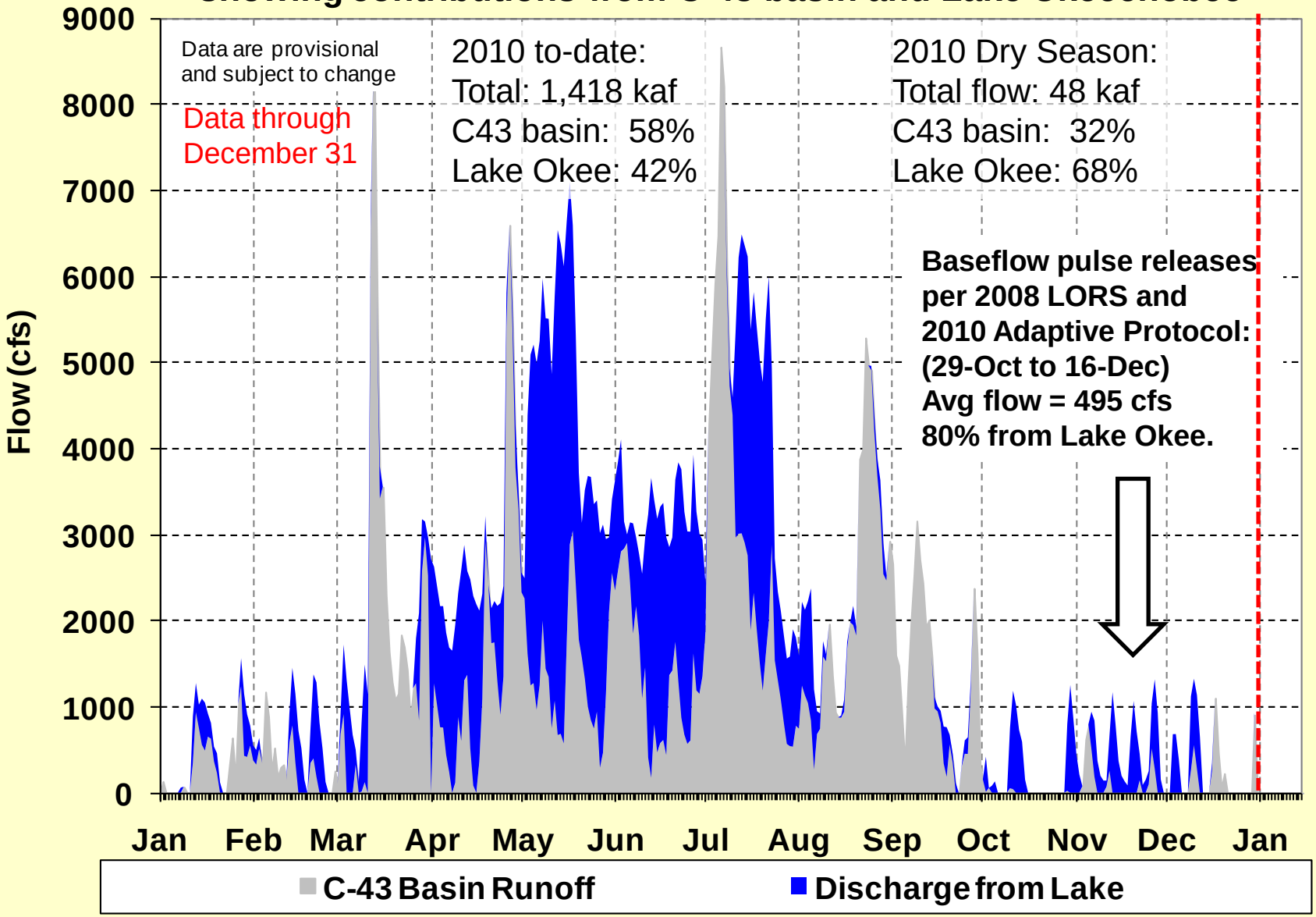

Water Conservation Area 1
Published: 1/12/2011
ZONE A1
ZONE B
ZONE C
Stage (ft NGVD)
About 0.8 ft below regulation schedule
Graph text inst
Oct
Nov
Dec
Jan
Feb
Flood Regulation
Canal Level
16.22
Marsh Level
16.25
Minimum


Water Conservation Area 2A
Published: 1/12/2011
Stage (ft NGVD)
About 0.5 ft above regulation schedule
Graph text inst hist
Oct
Nov
Dec
Jan
Feb
Flood Regulation
Minimum
Canal Level
11.85
Marsh Level
11.88


Water Conservation Area 3A
Published: 1/12/2011
Zone E1
Zone E
Stage (ft NGVD)
About 1 ft below regulation schedule
Graph text 63 64 65 hist
Oct
Nov
Dec
Jan
Feb
Lower Transition
Upper Transition
Flood Regulation
Marsh Level
9.45
Canal Level (S9TW)
9.24
ZONE E1
Minimum

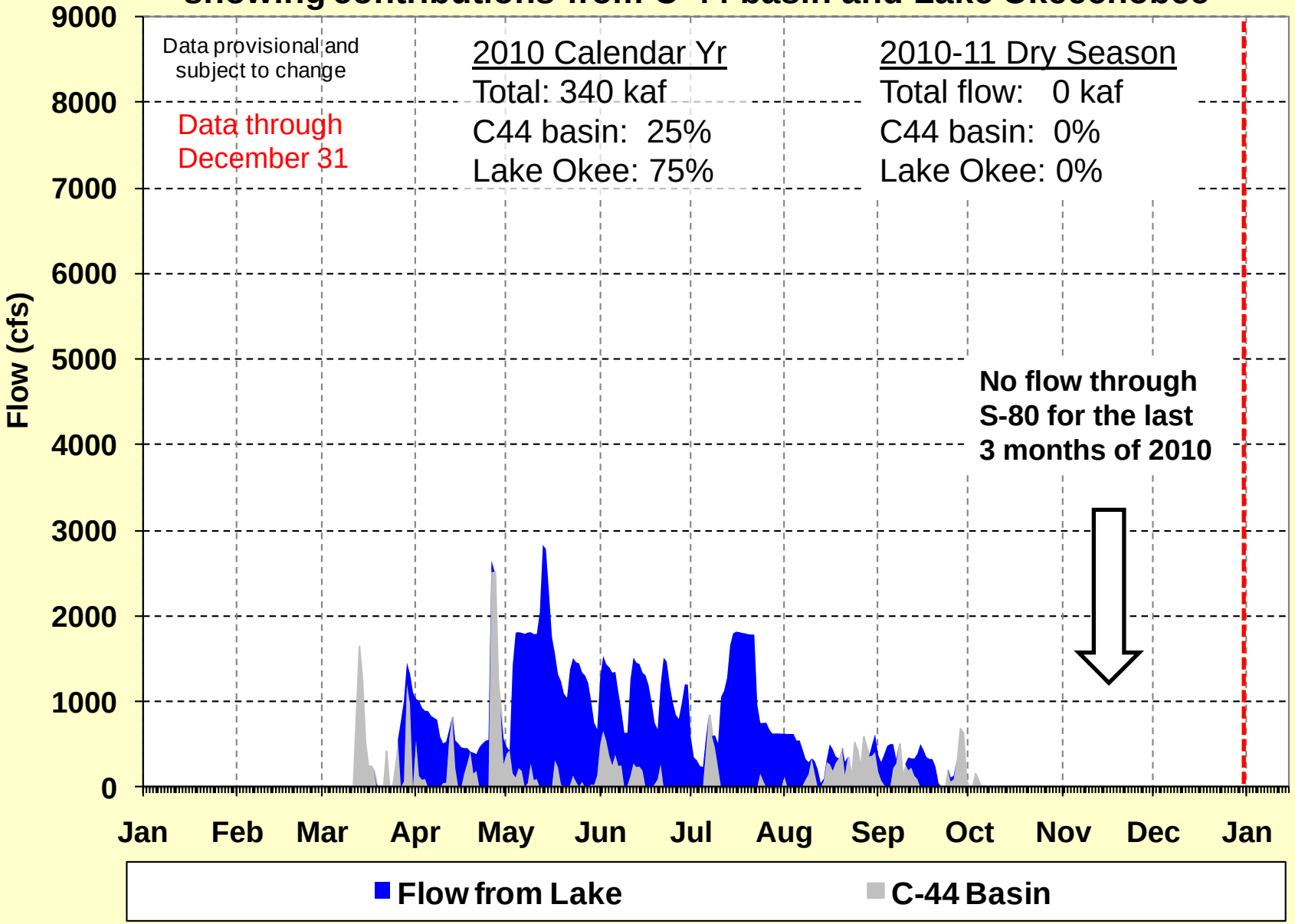
Total Flow From W.P. Franklin Lock and Dam (S-79)

showing contributions from C-43 basin and Lake Okeechobee



Total Flow From St. Lucie Lock and Dam (S-80)

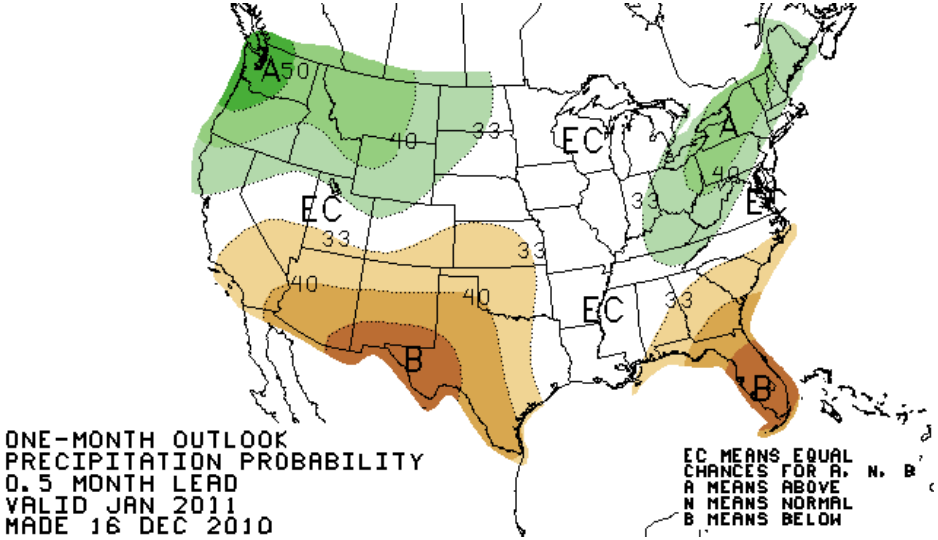
showing contributions from C-44 basin and Lake Okeechobee



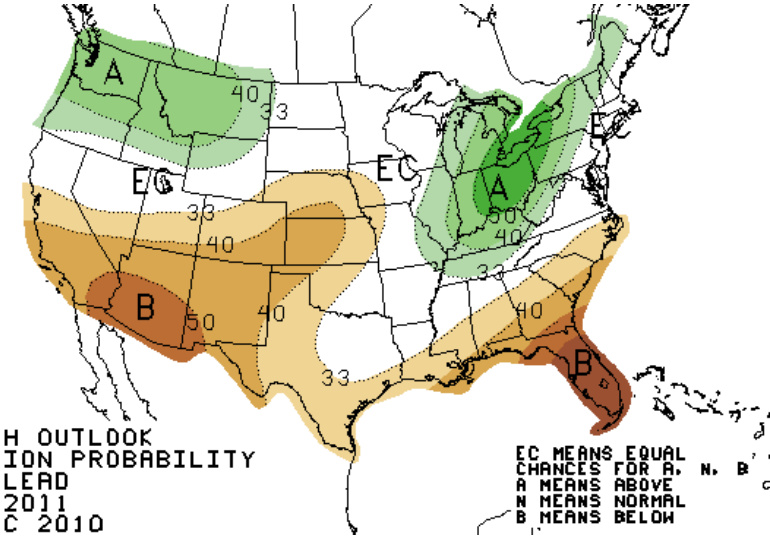
U. S. Seasonal Precipitation Outlook

National Climate Prediction Center (CPC)

Jan 2011



Feb-Apr 2011



<u>La Niña conditions are expected to continue into the 2010-2011 dry season</u>

The current precipitation outlook for central and southern Florida is:

- increased chance of below-normal (B) rainfall for January.
- increased chance of below-normal (B) rainfall for Feb-Apr 2011
- increased chance of below-normal (B) rainfall for the entire 2010-11 dry season

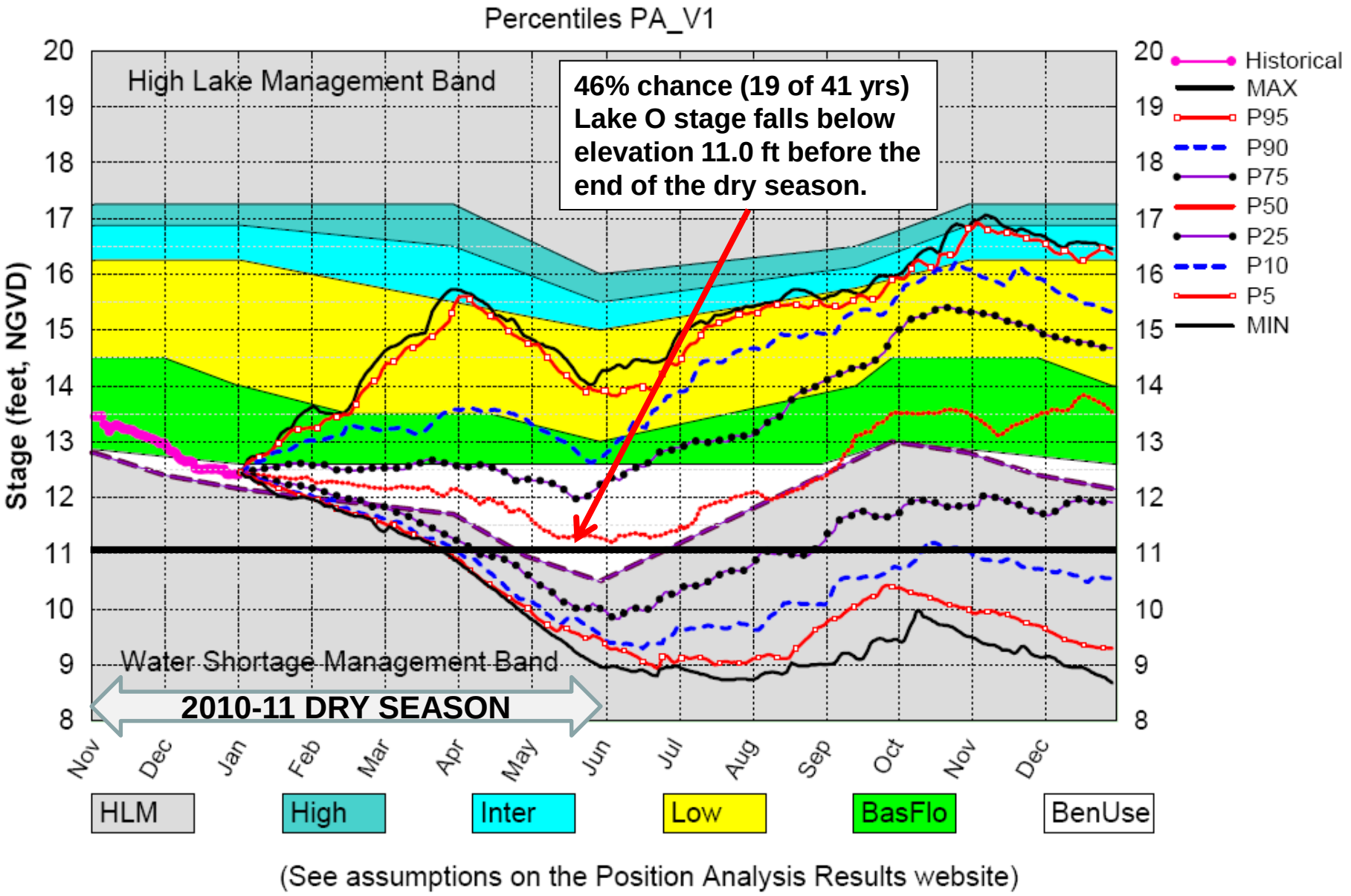
Lake Okeechobee Stage Forecast

- **Future Lake stage depends on future rainfall**
- **Projections provided monthly by SFWMD Hydrologic and Environmental Systems Modeling (HESM) Department**

  Don Ketprakong, Paul Trimble, Danielle Morancy, Luis Cadavid, Jayantha Obeysekera

- **Position Analysis**
  - **Each year starts with current hydrologic conditions**
  - **41 1-yr simulations of system response to historical rainfall conditions**
  - **Statistical summaries used to display projections**

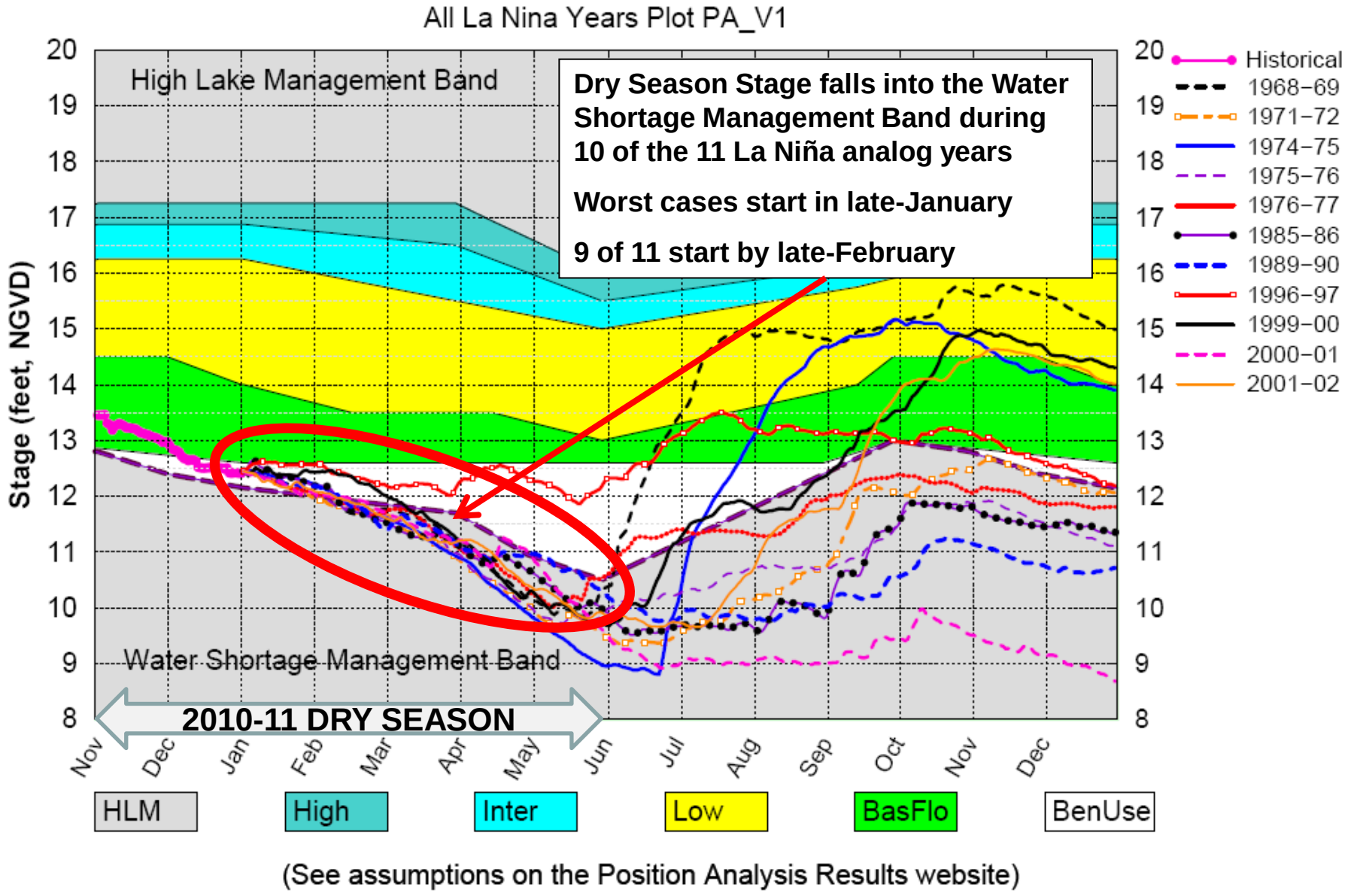
Lake Okeechobee SFWMM January 2011 Position Analysis



(See assumptions on the Position Analysis Results website)

Tue Jan 4 14:05:23 2011

Lake Okeechobee SFWMM January 2011 Position Analysis



(See assumptions on the Position Analysis Results website)

Tue Jan 4 14:05:50 2011

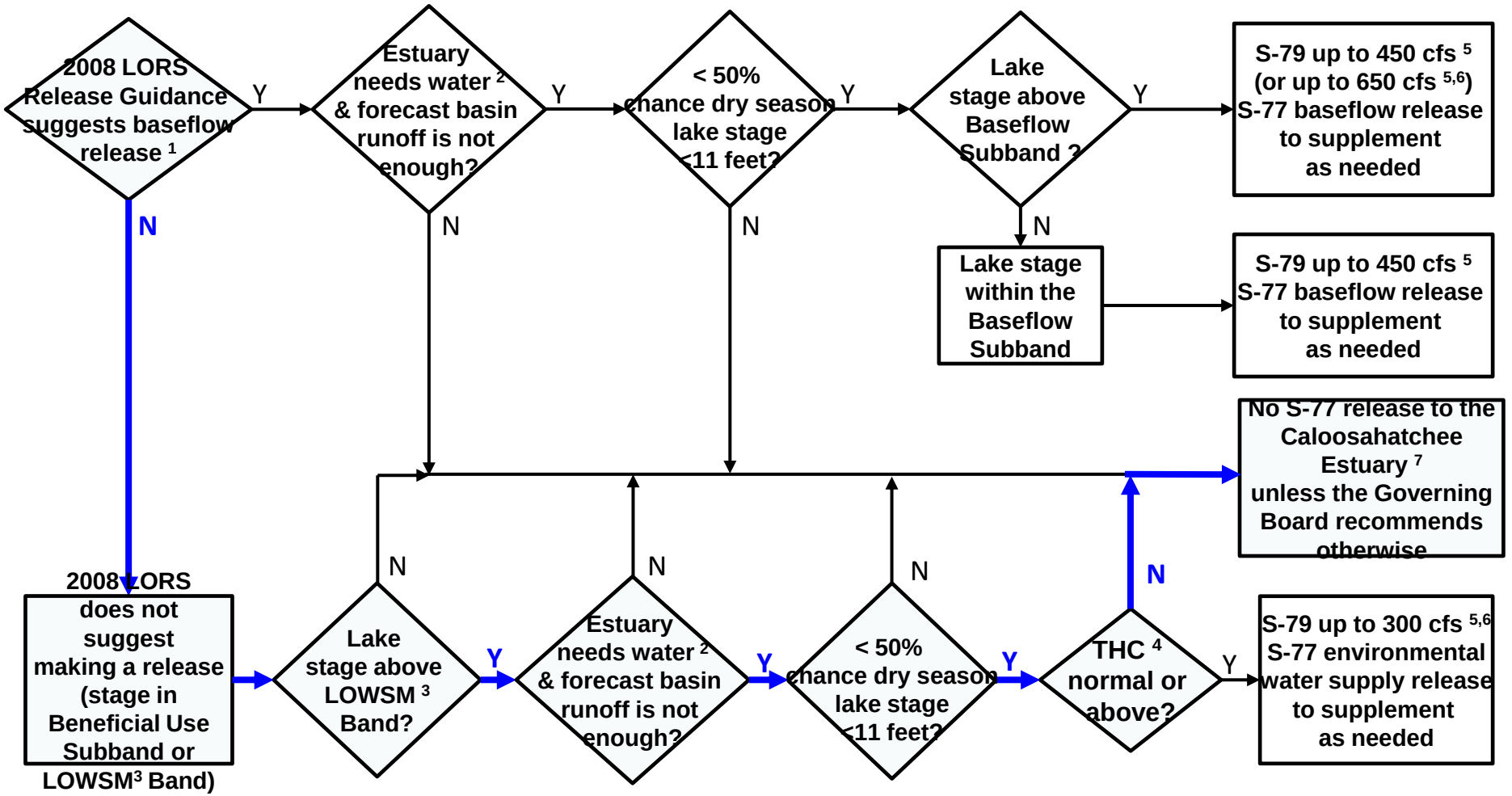
Lake Okeechobee Operations

- **USACE's Lake O Regulation Schedule (2008 LORS)**
  - **Stage is in Beneficial Use Subband**
    - **about 0.3 ft above the Water Shortage Management Band**
  - **Federal Water Control Plan defers to SFWMD's Adaptive Protocol**
- **SFWMD's Lake O Adaptive Protocol (2010)**
  - **Release guidance suggests no releases to the Caloosahatchee Estuary**
    - **Tributary Hydrologic Condition is in the "Dry" class**
    - **Chance of Lake stage falling below 11.0 ft is < 50%**
- **Weekly monitoring and recommendations to the USACE**

Questions??

Photo: Sunrise over Florida Bay – New Year's Day 2011 (M. Ansar)

Flowchart to Guide Recommendations for Lake Okeechobee Releases to the Caloosahatchee Estuary for 2008 LORS Baseflow & for Environmental Water Supply



[1]The 2008 LORS Release Guidance (Part D) can suggest baseflow releases in the Intermediate, Low, or Baseflow Subbands.

[2]Estuary "needs" water when the 30-day moving average salinity at I-75 bridge is projected to exceed 5 practical salinity units (psu) within 2 weeks.

[3]LOWSM = Lake Okeechobee Water Shortage Management.

[4]Tributary Hydrologic Condition (THC) is based on classification of Lake Okeechobee Net Inflow and Palmer Index.

[5]Can release less than the "up to" limit if lower release is sufficient to reach or sustain desired estuary salinity; cfs = cubic feet per second.

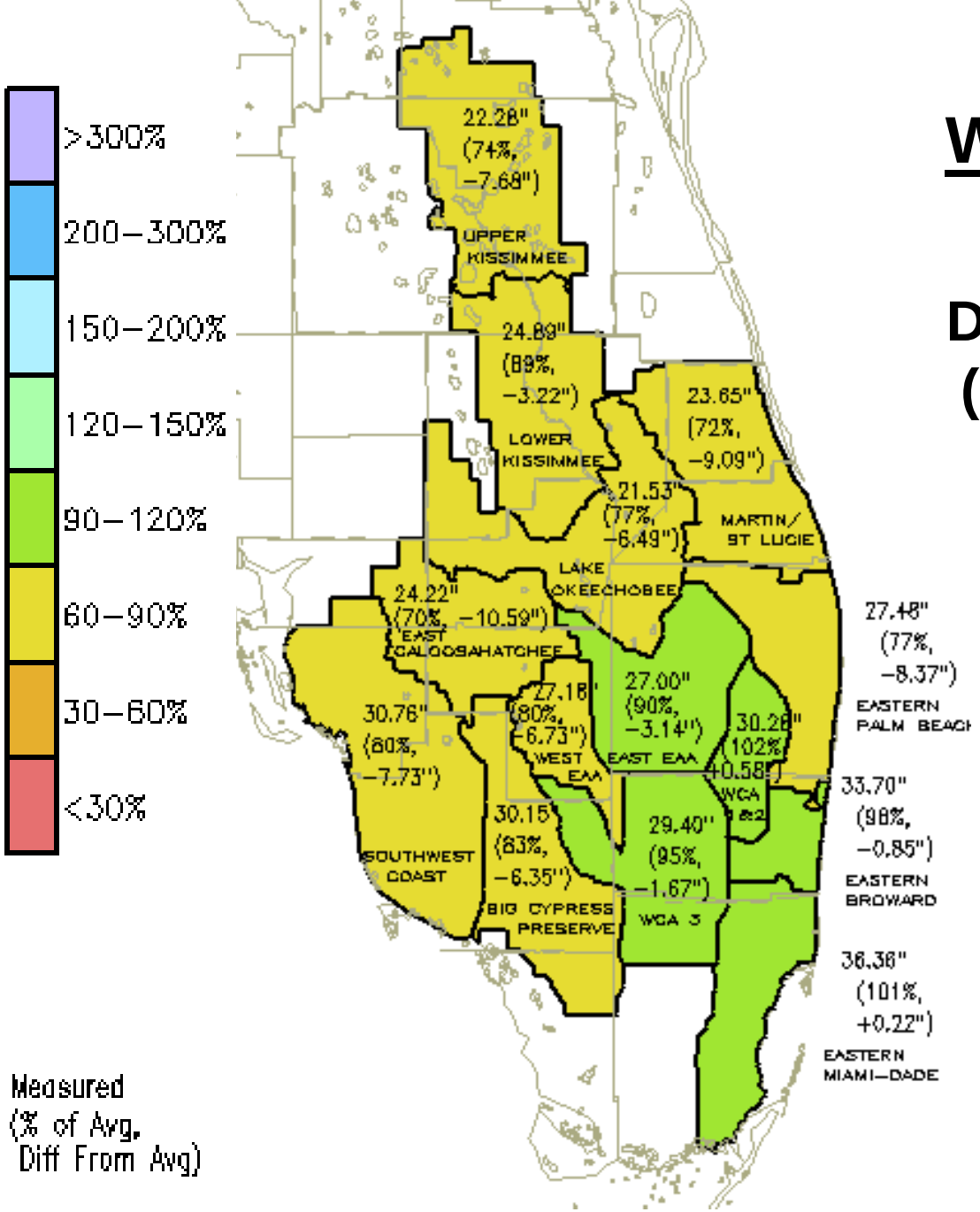
[6]After reviewing conditions in Water Conservation Areas (WCAs), Stormwater Treatment Areas (STAs), ENP, St. Lucie Estuary and Lake Okeechobee.

[7]Should this condition be reached, the Governing Board will be briefed at their next regularly scheduled meeting as part of the State of the Water Resources agenda item.

SFWMD 2010
Wet Season Rainfall
Jun 2 – Oct 26

DISTRICT-WIDE: 27.12”
(83% of Avg, or -5.36”)

Wet Season Average: 33.21”

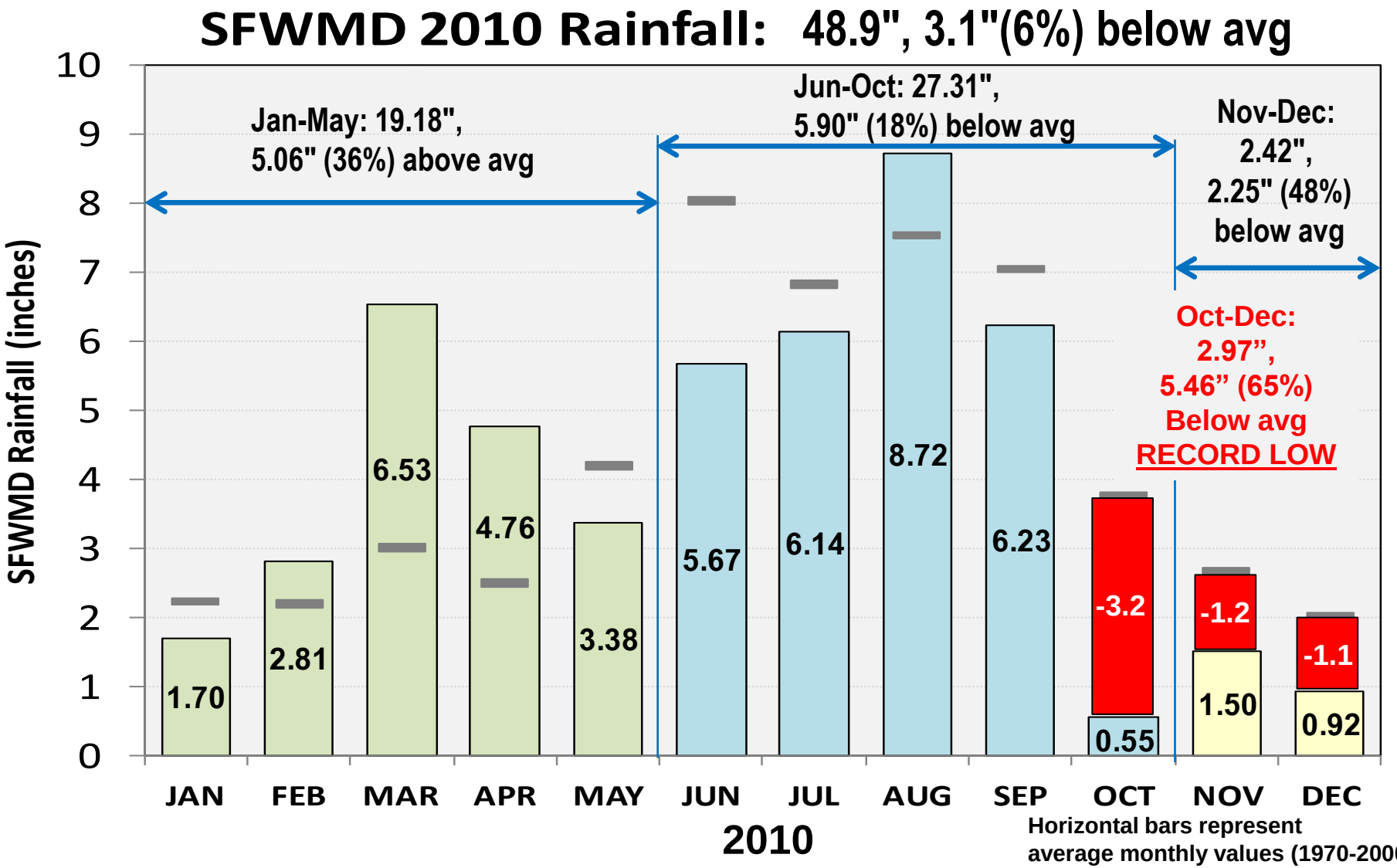


No significant rainfall from tropical events in 2010

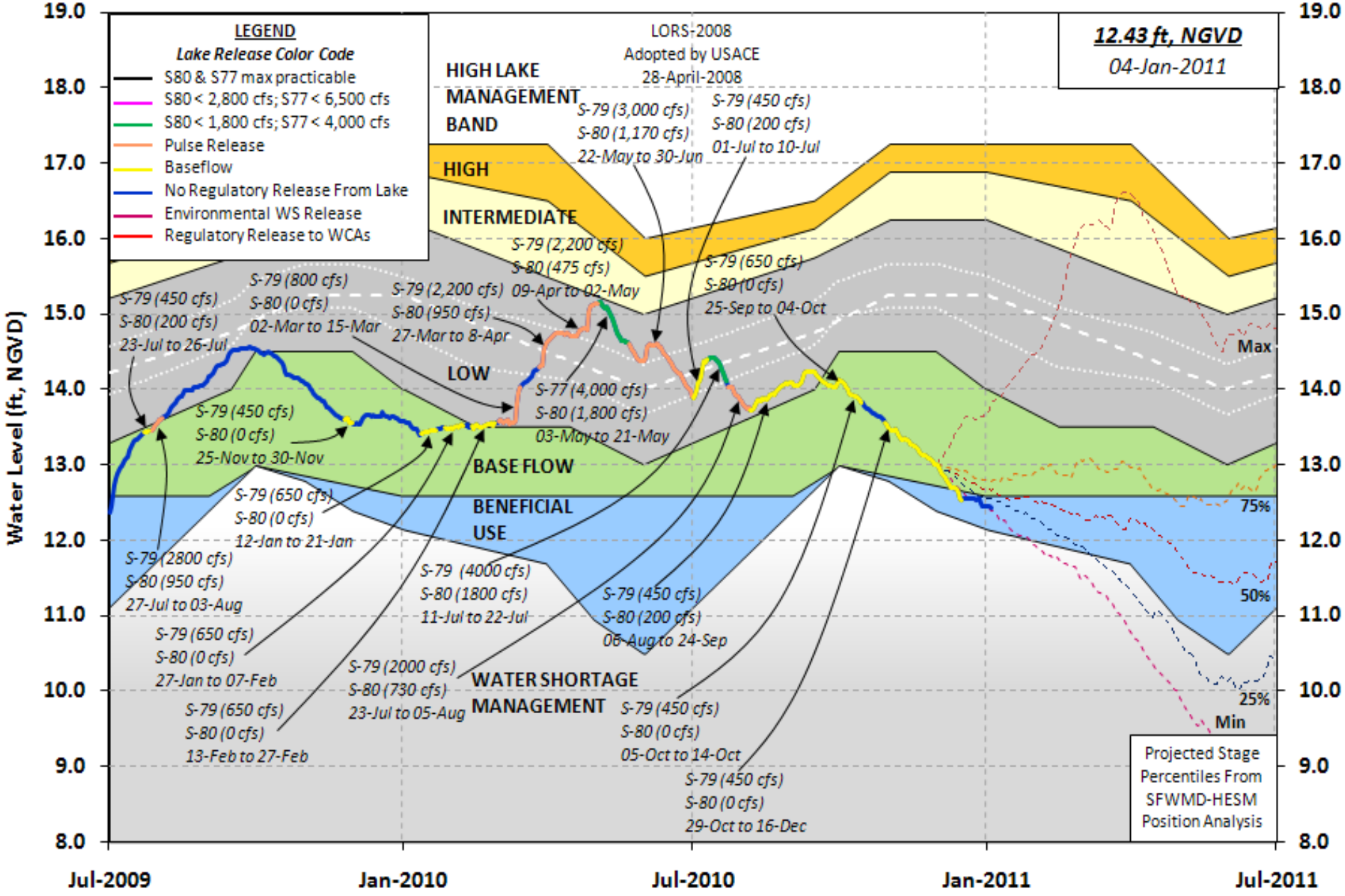
Wet Season Deficits:

- *~ 6” Lake Okeechobee*
- *~ 7” Upper Kissimmee*
- *~ 9” Martin/St. Lucie*
- *~ 10“ E. Caloosahatchee*

2010 SFWMD Rainfall Distribution

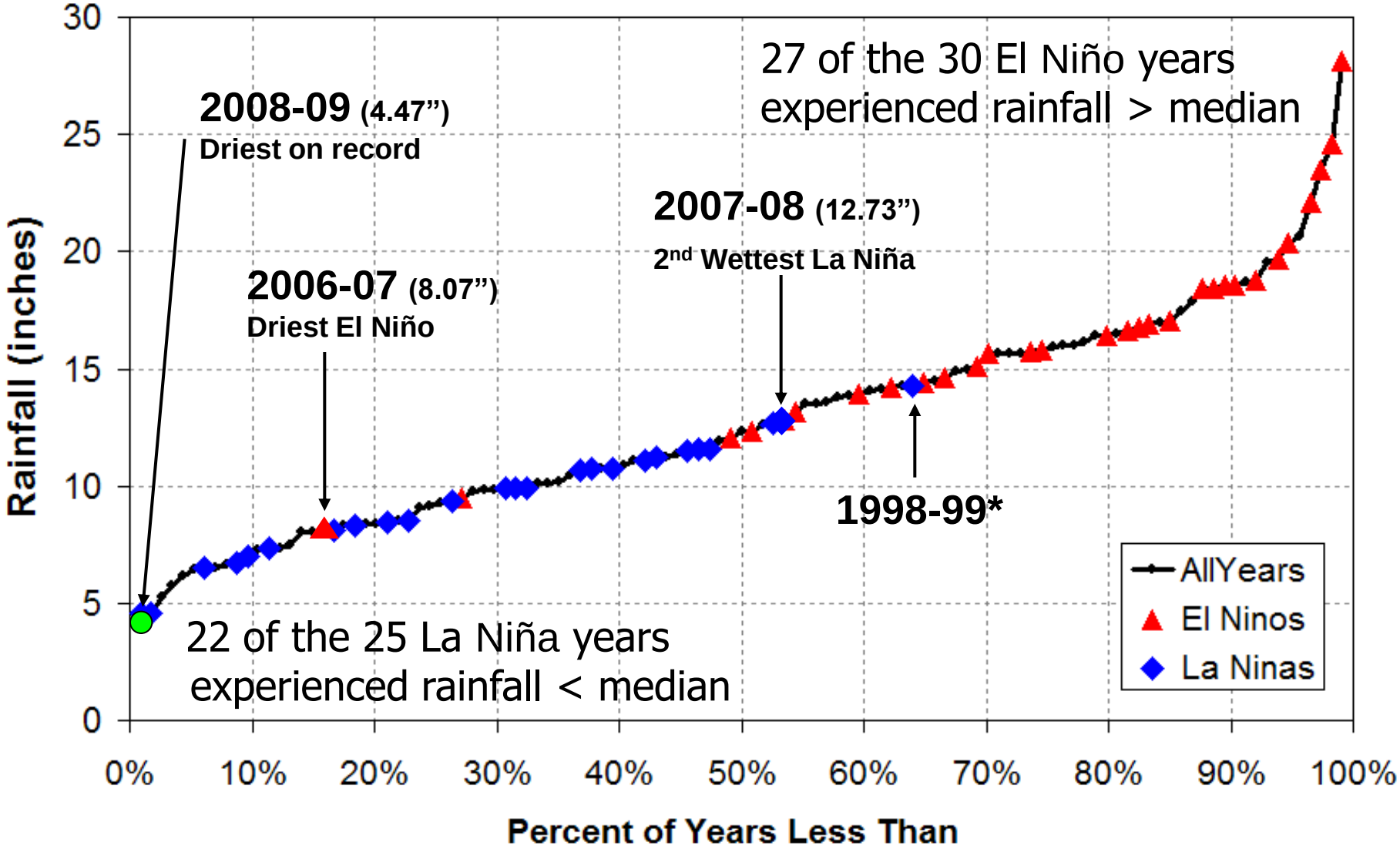


Lake Okeechobee Water Level History and Projected Stages



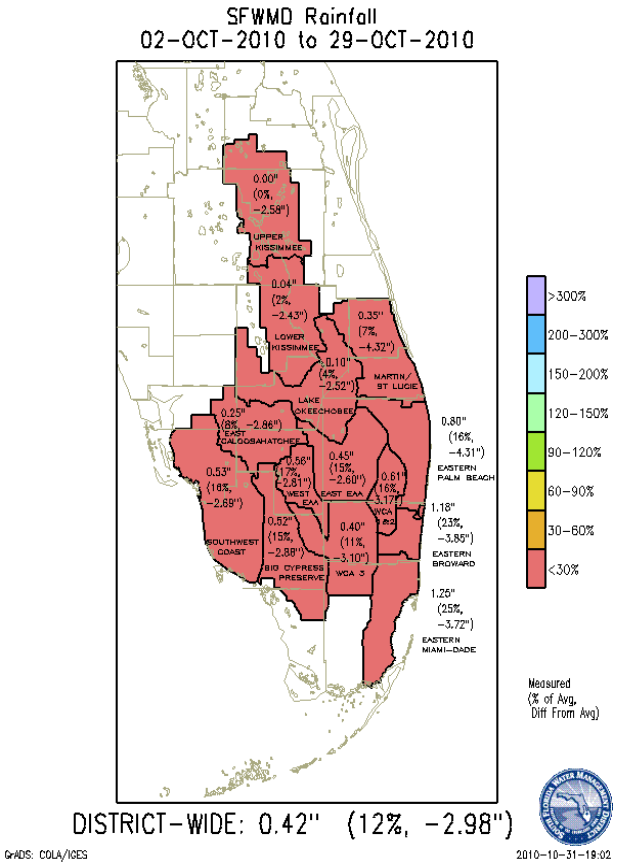
Historical SFWMD Dry Season Rainfall

1896-2008 (November-April)



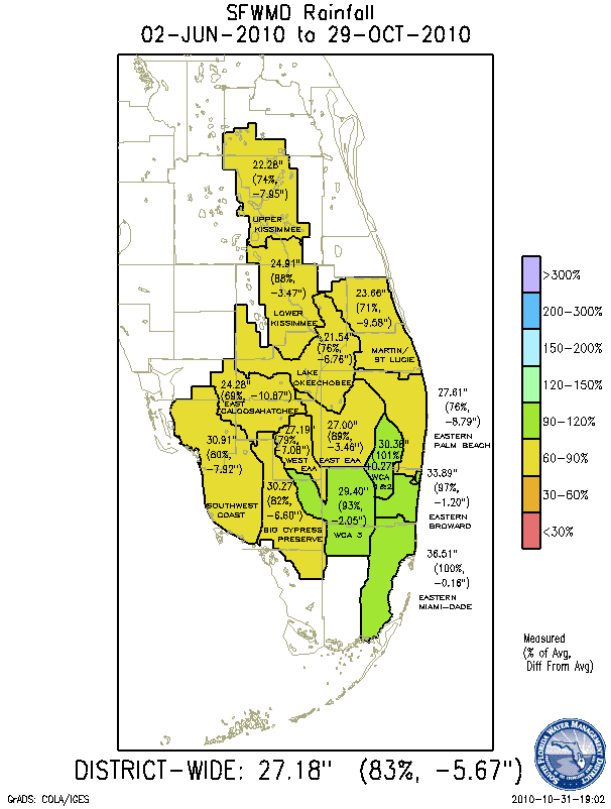
*1998 - 99 Heavily influenced by T.S. Mitch in Nov 1998 (5.6")

October



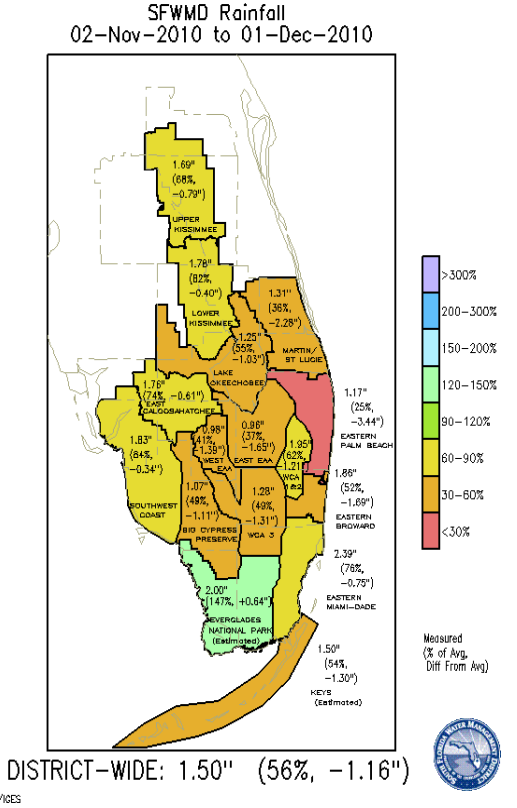
Wet Season

Up to Oct 29



November

Up to Dec 01



Driest wet season since 1984
Driest October on record (through 1932)
Sixth driest wet season on record.

2008 LORS

Part C: Establish Allowable Lake Okeechobee Releases to the Water Conservation Areas

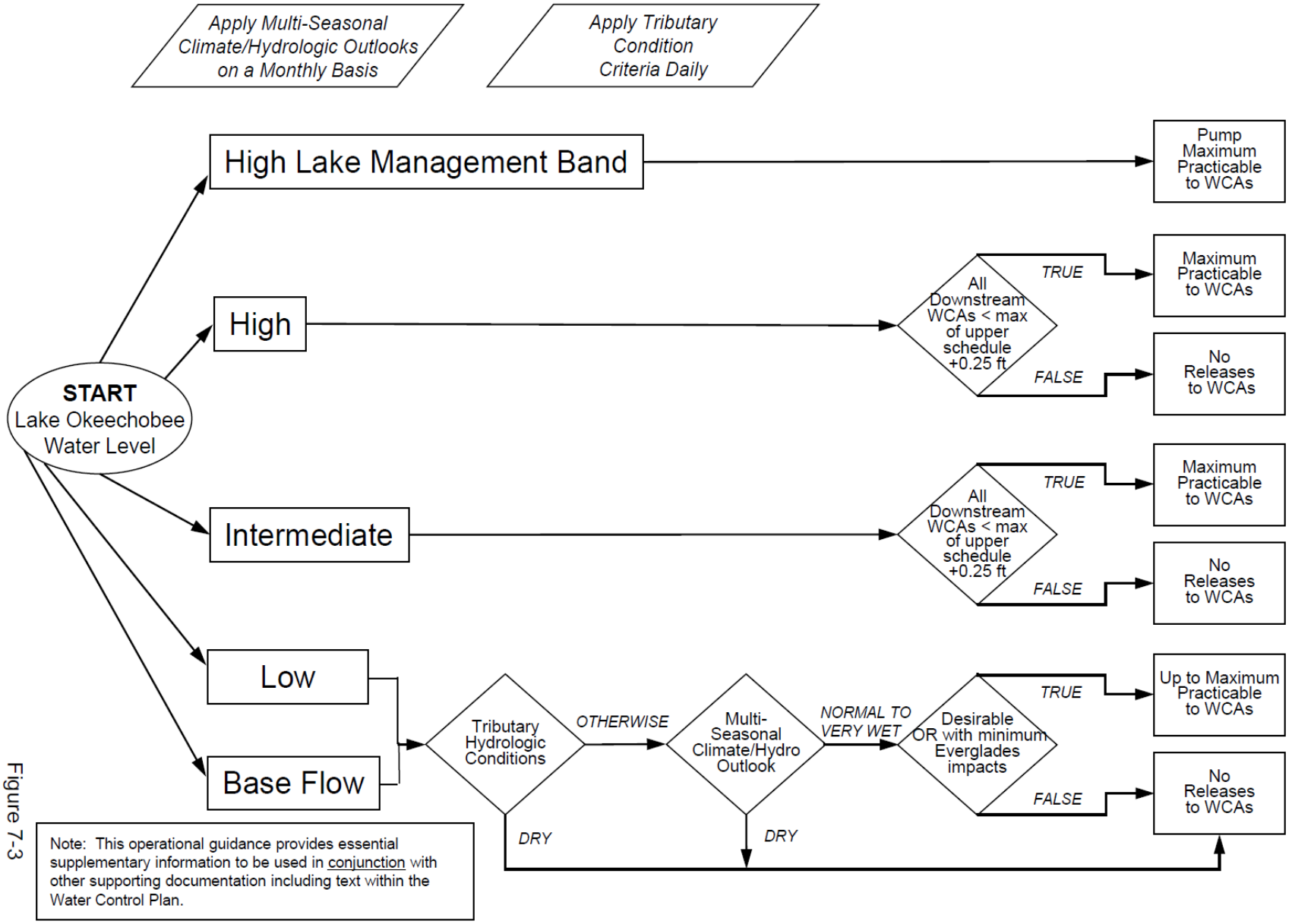


Figure 7-3

Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

2008 LORS

Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)

Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

When conducting Base Flow releases, flows can be distributed East and West up to 650 cfs as needed to minimize impacts or provide benefits through S-80 and S-79

Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis

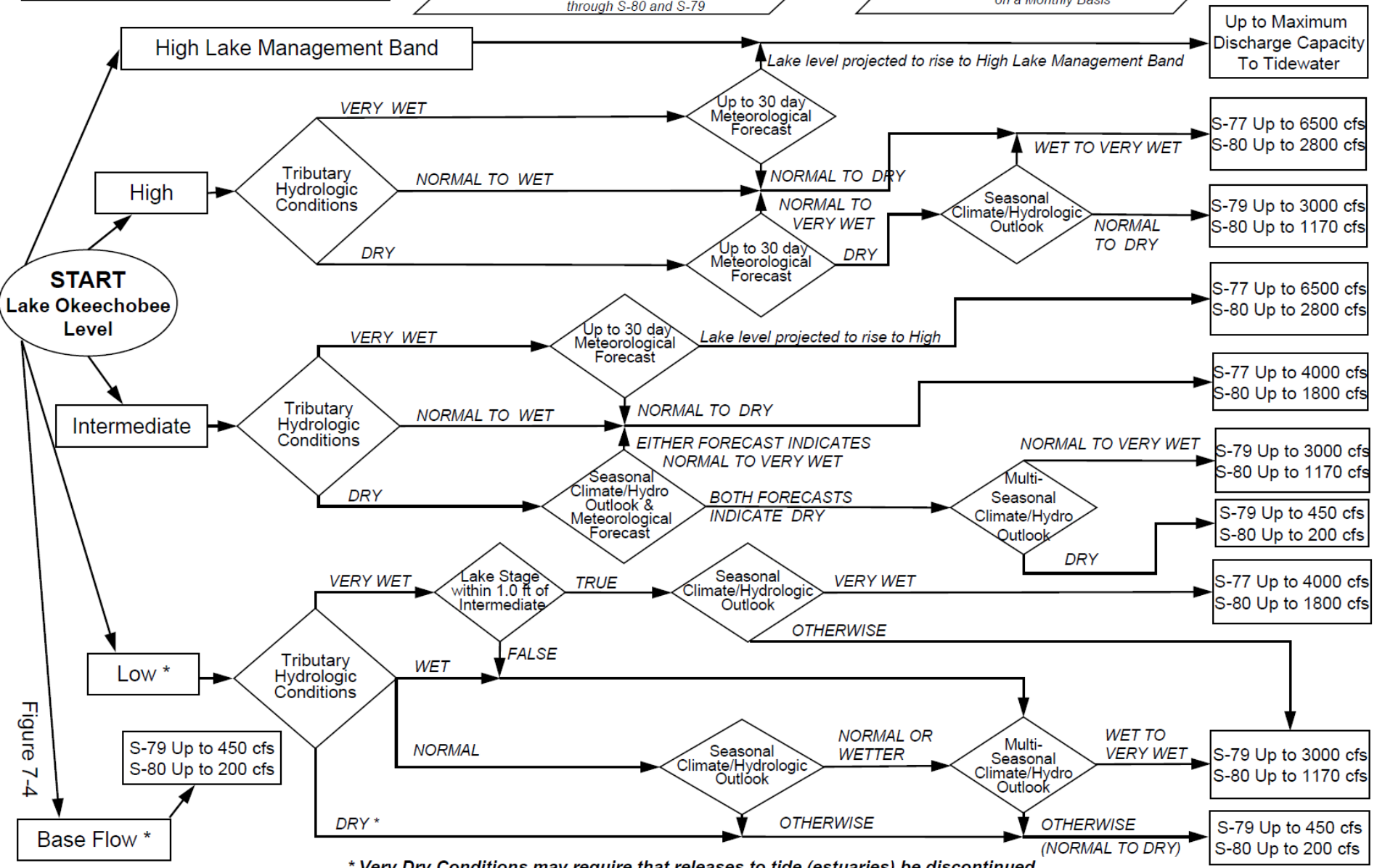
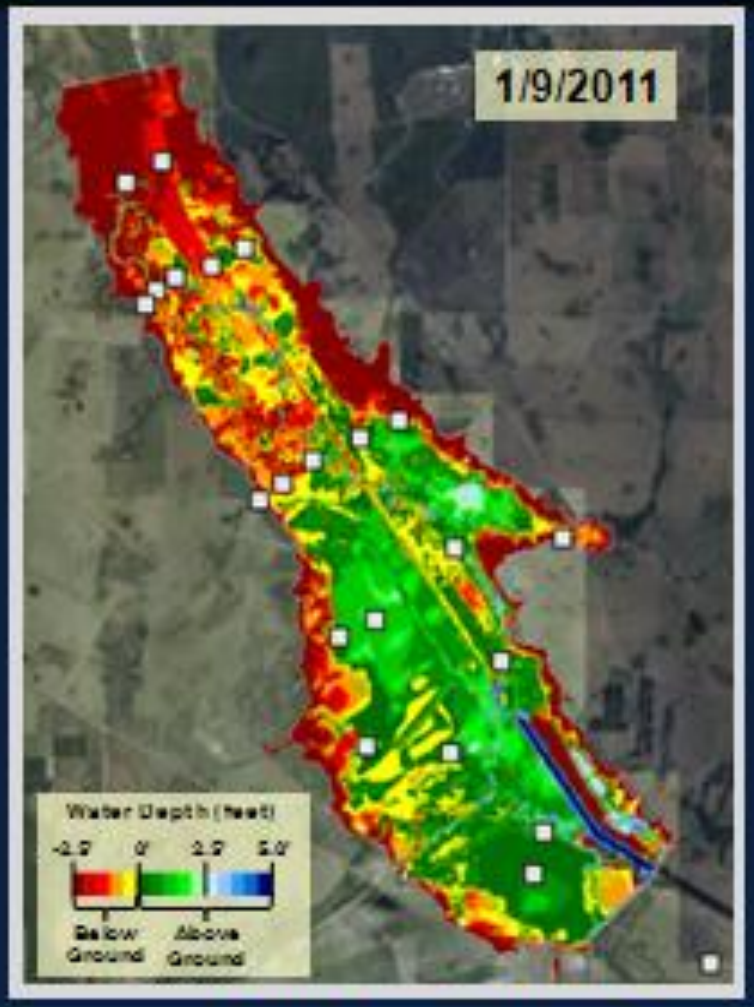


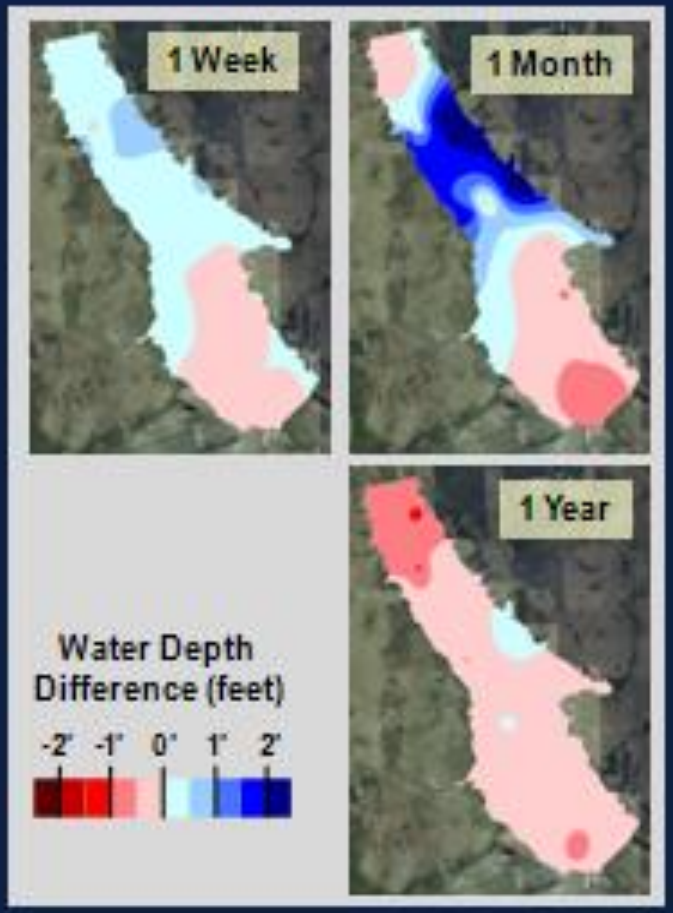
Figure 7-4

**** Very Dry Conditions may require that releases to tide (estuaries) be discontinued***

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

SFWDAT Kissimmee River (Pool C) Difference Maps (Present – Past)





South Florida Water Depth Assessment Tool (SFWDAT)

SFWDAT Everglades Difference Maps (Present – Past)